CLAIMS

1. A method comprising:

determining a distance between a user to boundaries of a gaseous volume; and

storing the distance in an alpha channel to arrive at an alpha value.

2. The method as recited in Claim 1 further comprising blending a color pixel outside the gaseous volume with a color pixel inside the gaseous volume based on the alpha value.

3. The method as recited in Claim 1, wherein determining a distance comprises adding and subtracting a distance from the user to the front and back faces of the gaseous volume.

4. The method as recited in Claim 1 wherein storing the distance in alpha channel to arrive at an alpha value comprises calculating a total travel distance through the gaseous volume.

5. The method as recited in Claim 1 further comprising displaying the blended pixel on a display screen.

6. The method as recited in Claim 1 wherein the gaseous volume is a three dimensional bounded volume region in a scene.

7. One or more computer-readable media comprising computer executable instructions that, when executed, perform the method as recited in Claim 1.

8. A system for displaying a volumetric gaseous phenomenon in a scene, comprising:

an alpha channel, configured to receive travel distance information about the gaseous phenomenon;

a fog unit, configured to receive the travel distance information from the alpha channel and covert the information to a fog factor value; and

a blending unit, configured to blend a color of the gaseous phenomenon with a color from the scene based on the fog factor value to produce a pixel.

9. The system as recited in Claim 8 further comprising a frame buffer configured to store the pixel.

10. The system as recited in Claim 8 further comprising a frame buffer configured to store the pixel and a display unit configured to render the pixel for display on a screen.

11. The system as recited in Claim 8 wherein the travel distance is a distance between a user to a boundary of a gaseous volume.

12. The system as recited in Claim 8 wherein the system is a flight simulator.

13. The system as recited in Claim 8 wherein the system is a video game.

14. A method for rendering volumetric fog or other gaseous phenomena, comprising:

receiving volume object data that defines at least one three-dimensional bounded volume region; and

obtaining travel distance information in an alpha channel, the travel distance information being a function of distances in each three-dimensional bounded volume region having a face between a respective pixel and a reference point.

15. The method of claim 14, further comprising converting travel distance information in the alpha channel to obtain a fog factor.

16. The method of claim 15, further comprising blending scene color and fog color based on the fog factor.

17. The method of claim 14, wherein the travel distance information comprises total travel distance information, the total travel distance information being equal to the sum of distances through each three-dimensional bounded volume region along a ray between a respective pixel and a reference point.

18. The method of claim 14, wherein the travel distance information comprises scaled total travel distance information, the scaled total travel distance information being equal to the sum of distances through each three-dimensional bounded

volume region along a ray between a respective pixel and a reference point scaled by a scaling value.

19. A system for rendering volumetric fog or other gaseous phenomena, comprising:

means for receiving volume object data that defines at least one three-dimensional bounded volume region; and

means for obtaining travel distance information in an alpha channel, the travel distance information being a function of distances in each three-dimensional bounded volume region having a front face between a respective pixel and a reference point.

20. A system for rendering volumetric fog or other gaseous phenomena, comprising:

volume object data that defines at least one three-dimensional bounded volume region;

a one-dimensional texture stored in texture memory;

a graphics subsystem that obtains travel distance information in an alpha channel, the travel distance information being a function of distances in each three-dimensional bounded volume region having a front face between a respective pixel and a reference point; and

an alpha buffer that stores the obtained travel distance information in an alpha channel for each pixel that covers one or more of the three-dimensional bounded volume regions.

21. The system of claim 20, wherein said graphics subsystem includes a texture coordinate generator.

22. The system of claim 21, wherein said texture coordinate generator comprises a texgen.